FACT SHEET

PEKIN LAKE
ILLINOIS RIVER ECOSYSTEM RESTORATION

MARCH 2002

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Illinois River Ecosystem Restoration

1. STUDY AUTHORITY. This site-specific evaluation is being conducted as a component of the Illinois River Ecosystem Restoration Study, which is a General Investigation study authorized by Section 216 of the Flood Control Act of 1970 with supplemental authority from Section 519 (Illinois River Basin Restoration) of the Water Resources Development Act of 2000. The study was initiated pursuant to the provision of funds in the Energy and Water Development Appropriations Act, 1998. The Feasibility Study was initiated in October 2000, with completion scheduled for December 2003.

2. STUDY PURPOSE. As stated in the Illinois River Ecosystem Restoration Project Study Plan, a number of site-specific evaluations will be conducted during the feasibility study. The site-specific evaluations will focus on developing detailed restoration alternatives for potential implementation at specific sites. A Restoration Needs Assessment (RNA) will be conducted to develop a comprehensive, basin-wide assessment of historic ecological change, existing conditions, predicted future conditions, and desired future conditions. If greater system needs are identified during the RNA, a larger list of potential improvements will be prepared and recommended for authorization. The main purpose of the document is to guide selection of the site-specific projects.

This document will: (1) provide a general description of the existing and anticipated future conditions of Pekin Lake, (2) identify problems, opportunities, and goals and objectives for restoration, (3) identify potential alternatives to address the problems, and (4) select a critical (pilot) project(s) for the area. Following the selection of the critical project, a Project Management Plan will be developed to identify the scope, schedule, and cost of the feasibility level investigation.

3. LOCATION OF STUDY AREA/CONGRESSIONAL DISTRICT.

Pekin Lake is a backwater lake complex located adjacent to the Illinois River at RM 153-156. The site encompasses approximately 1,200 acres of shallow backwater lakes and bottomland forest (see Figure 1).

Pekin Lake is located in the 18th Congressional District (LaHood - R).

4. DISCUSSION OF PRIOR STUDIES, REPORTS AND EXISTING WATER PROJECTS.

a. <u>Prior Studies and Reports</u>. In conducting this analysis, a number of documents were consulted, which included:

(1) Pekin Lake State Fish and Wildlife Area – Management Plan, 2001, Illinois Department of Natural Resources. The site management plan summarizes the site history, significant resources, and makes recommendations for future management of the site.

(2) Soldwedel and Worley Lakes: Topographic Features and Preliminary Sediment Characteristics, February 2001, James A. Slowikoski and Nani Bhowmik, Illinois State Water Survey. This letter report provides a brief overview of topographic features and sediment characterizations for the Soldwedel and Worley Lakes.

(3) Ground-Water Conditions in the Vicinity of Soldwedel and Worley Lakes, February 2001, Stephen Burch, Illinois State Water Survey. This letter report summarizes ground water conditions near Pekin, Illinois, and addresses connectivity of the lakes with the river.

(4) Vegetative Sampling, 2001, Upper Midwest Environmental Science Center, http://www.umesc.usgs.gov/data_library/data_library.html, Upper Mississippi River Environmental Management Program - Long Term Resource Monitoring Program (LTRMP). Staff at the Illinois River Biological Station (IRBS) have monitored submersed aquatic vegetation at Pekin Lake yearly from 1998 through 2001 using standardized protocols through the Long Term Resource Monitoring Program (LTRMP).

(5) Dredged Material Management Plan for Dredged Material Placement: Illinois Waterway Navigation Project, Site Plan for the Lick Creek/Peoria Lock Lower Dredge Cuts, River Miles 154.0-157.7, August 1996, U.S. Army Corps of Engineers, Rock Island District. This document records the process used to develop a Dredged Material Management Plan (DMMP) by evaluating the potential alternative placement locations for dredged materials in this reach.

(6) Pekin Lake Conservation Area - Water Flow Balance Proposal, June 1986, Illinois Association of Duck & Goose Hunters. The proposal calls for an 18-inch or 24-inch water supply line from the upstream side of Peoria Lock and Dam and a discharge structure with drop logs.

b. Existing Water Projects at Pekin Lake. Significant actions include:

(1) Existing Corps of Engineers Activities in the Pekin Lake Area. There are no existing Corps of Engineers activities at Pekin Lake, but activities in the area include the operation of Peoria Lock and Dam and dredging of a reoccurring shoaling area in the navigation channel.

Peoria Lock and Dam is located at River Mile (RM) 157.7 near the city of Peoria, Illinois. This facility, constructed in 1938, has a lock with a usable chamber 110 feet wide and 600 feet long with a lift of 11 feet. The dam is constructed of wicket gates that can be lowered during higher flows, allowing tows to transit the area without locking through the chamber. Open river conditions, wickets lowered, typically occur 38% of the year. At other times, the dam is operated to maintain a pool elevation of 440 feet MSL upstream of the lock and dam. River levels downstream are influenced by flows at the Peoria Lock and Dam, the Mackinaw River which comes into the Illinois River at RM 147.7 and the La Grange Lock and Dam at RM 80.2. The La Grange Lock and Dam has a similar design and operation to the Peoria Lock and Dam and its influence on river water levels progresses farther upstream as river flows decrease.

Shoaling in the navigation channel regularly occurs from RM 154.0-157.7. Since 1940, the dredge cuts have required dredging a combined total of 21 times, generating 1,229,127 cubic yards to provide a safe and unobstructed navigation channel.

(2) Existing Federal Activities at Pekin Lake. The Upper Mississippi River Environmental Management Program (EMP) - Long Term Resource Monitoring Program (LTRMP) monitors fish and vegetation at Pekin Lake. There are no other federal activities at the site.

(3) Partnerships and Ongoing Water Resource Projects and Programs. The Illinois Department of Natural Resources (ILDNR) owns and manages Pekin Lake as a State of Illinois Fish and Wildlife Area.

The city of Pekin sought and received a $150,000 state grant to conduct restoration at Pekin Lake. This grant has not been utilized and represents a potential non-federal funding source for restoration in the area.

5. PLAN FORMULATION.

a. Identified Problems.

(1) Existing Conditions. The Pekin Lake Area is located adjacent to the city of Pekin and consists of six former and current bodies of water separated by moist soil plant communities and bottomland timber. Sediment deposited over the years has filled the former lake basins, making most of these water areas dry or too shallow to sustain fish life during normal pool levels in the Illinois River. The lakes and their former sizes were:

Soldwedel Lake, 105 acres (old Pekin Lake)
Worley Lake, 258 acres
Lake of the Woods, 108 acres
Slim Lake, 57 acres
Round Lake, 16 acres
Little Round Pond, 4 acres

These lake basin areas are all connected by channels or culverts through man-made levees and causeways. The connecting channel to the Illinois River is located at the south end of Pekin Lake, near the Illinois Route 9 road bridge. The only water control structure at the site is a nonfunctioning, east-west levee that was constructed many years ago to retain water in Worley Lake, Upper Lake of the Woods, Round Pond, and Slim Slough for the purpose of waterfowl hunting. A causeway was constructed approximately 600 feet north of the levee to provide access and footings for a CILCO electric transmission line. There is an old 8-foot tube at the south end of Worley Lake, through the causeway.

For many years, a low-level dam was maintained at the south end of Pekin Lake to prohibit fish from entering the lake and being trapped in the ice in the winter. Ice was cut from the lake and sold commercially. In 1938, the Peoria Lock and Dam was completed, replacing the dam at Copperas Creek. This resulted in a lower pool elevation in the Illinois River adjacent to Pekin Lake, thereby lowering water levels in Pekin Lake.

More recently, Pekin Lake was used by private duck clubs and the center levee was constructed to allow water control for waterfowl management. In 1965, CILCO purchased a 400-foot easement from the Pekin Rod and Gun Club and began construction of the power line levee.

The Forest Park Foundation purchased the Pekin Lake property and sold it to the state in 1966. The land was purchased for open space, as a wildlife sanctuary, and to preserve the heron rookery. The state has since purchased other small tracts. Biological studies of the area have been conducted since 1962, including annual monitoring of the heron rookery.

Current management of Pekin Lake State Fish and Wildlife Area (SFWA) is passive. The dam at the south end of Pekin Lake has long since deteriorated and the center levee is no longer complete. During periods of high water, boats can enter Pekin Lake at the south end from the Illinois River. Other uses include bank fishing, hiking, picnicking, waterfowl hunting, archery deer hunting, and wildlife observation.

Hydraulics. The hydrologic conditions in the Pekin Lake project area are essentially determined by the Illinois River water level. River water enters the lakes through a connection at the southern end of the site when river water surface elevations exceed the high-point elevation of 431 feet. It also enters the lakes via overland flood flow when it exceeds approximately 440 feet. Lick Creek once fed the lakes in this area, but at some point since 1904 the creek was channelized to flow directly into the Illinois River, and so very little area now contributes runoff directly to the lakes. Regional groundwater discharges into the Illinois River, and the project area may intercept some of this groundwater flow, but the sand aquifer underlying the area provides a high-conductivity route for groundwater to pass to the river, so groundwater is unlikely to emerge into

the area and maintain water levels significantly higher than the river level. Likewise, water in the lakes is likely to drain via the aquifer when a significant water level difference exists between the lakes and the river, although this would have to be confirmed by further geotechnical investigation. Groundwater may discharge at levels at and slightly higher than river levels, so when the river is high enough the groundwater flow may emerge along the edge of the waterline within the project. The other source of water to the site is direct precipitation.

The combination of the lack of upland runoff and the configuration of the outlet to the river has led to a lower sediment load to this area than experienced in many other backwater lakes. Sediment-bearing upland runoff is not a concern, and any groundwater or precipitation contributions would have little sediment. When water levels in the Illinois River are lower than approximately 440 feet, river inflows occur only through the constricted entrance at the south end of the site; river water would tend to back up through this constriction, reducing flow velocities and drawing water from the edge of the river instead of the high sediment-load flows in the main channel. When the river exceeds the bank level of 440 feet, flood flows enter the site, contributing both sediment and water, and the effects of the constricted outlet no longer protect the site from sediment loading. It should be noted that the high-flow periods during which the river would have the most connection to the site are also the times of high sediment concentration, so despite the fact that the site is better off than some backwater lakes, it still receives a large sediment load from the river.

Because the site is located between the Peoria Lock and Dam and the Kingston Mines gage on the Illinois River, it is possible to construct a hypothetical gage record of the water levels at the site outlet. Figure 2 shows the median annual hydrograph for 62 years of Illinois River water level records. Also shown are the 90% and 10% exceedance water levels, which correspond to the 10-year low- and high-water levels, respectively. This figure shows that the site is generally flooded from late March through late May, but that there is at least a 10% chance that it will be flooded on any day of the year except from late July until the autumn. The average annual high water level is 446.8 feet MSL, and the 90% and 10% exceedances are 442.7 and 452.1 feet MSL, so the site can be expected to flood even during the 10-year low-flow year. The corresponding low-water levels are 430.5, 429.8, and 431.2 feet MSL, so the site draws down nearly every year until the surface water connection to the river goes dry.

Although this water regime currently maintains the site, historic water levels may have been higher due to control of the Illinois River and changes on the site. The construction of Copperas Creek dam elevated river water levels at the site from the time it was constructed in the late 1870's until it was removed in 1936. The current dams at La Grange and Peoria maintain lower water levels in this area because the site is in the extreme upstream end of the La Grange pool and the effects of the dam are generally small relative to the effects of the Copperas Creek dam, which was only 16 miles downstream. The dam constructed across the outlet to benefit ice production in Pekin Lake, in combination with flows from an undiverted Lick Creek and higher river water levels, probably maintained higher water levels on the site at the turn of the century. The dam across the outlet has since become ineffective, and the water regime is no longer affected by Lick Creek flows.

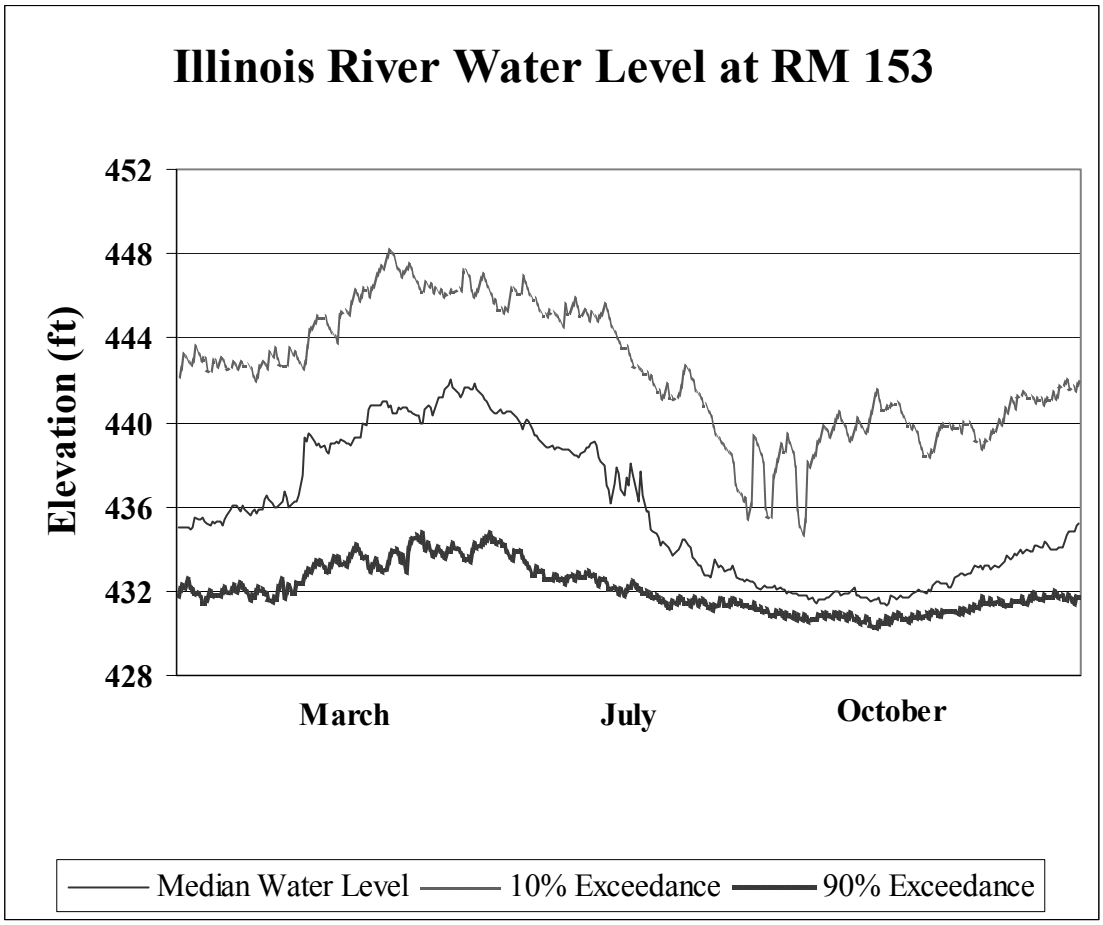


Figure 2. Median annual hydrograph for Illinois River Mile 153

Fishery Resources. Pekin Lake currently provides spawning and nursery habitat for Illinois River fishes. High river stages during spring provide fish access to off channel spawning sites. As spring floods subside, the fishes produced in Pekin Lake are drained back into the LaGrange Pool of the Illinois River. This recruitment of fish is a critical fishery function of the site and is essential to the aquatic health and vitality of the Illinois River. Any proposed water management structures at Pekin Lake should be designed in such a way that the fishery nursery function can be maintained

Staff at the Illinois River Biological Station (IRBS) have been collecting fish data from the Pekin Lake complex since 1995. Boat access to Pekin Lake is limited throughout much of the year due to low water levels. However, 5,470 fish including 32 taxa have been collected using mainly fyke, minnow fyke, and electrofishing gears since 1995. The top five most abundant species collected over the period of record were gizzard shad (*Dorosoma cepedianum)*, white bass (*Morone chrysops)*, Common carp (*Cyprinus carpio)*, emerald shiner (*Notropis atherinoides)*, and black bullhead (*Ameiurus melas)*. In addition to fish, one common snapping turtle (*Chelydra serpentina)* and one red-eared slider (*Chrysemys scripta)* were also collected at Pekin Lake. (Personal Com. Mark Pegg, INHS and LTRMP Website).

Forest Resources. Floodplain forests surrounding Pekin Lake occupy approximately 633 acres and consists of tree species typical of a seasonally flooded river bottom. Cottonwood, silver maple, green ash, black willow, and boxelder constitute the most prevalent tree species at Pekin Lake. The hydrologic regime of the Illinois River has probably been the single largest factor in determining the forest condition at Pekin Lake, though historic logging, fire suppression, and

disruption of other disturbance regimes have influenced forest structure.

The three soil types present are Jules silt loam, Lawson silt loam, and Landes fine sandy loam. These soils are listed in the *Soil Survey* as being frequently flooded, except Jules, which is listed as occasionally flooded. There is some likelihood that other bottomland hardwood species such as hackberry, pecan, pin oak, shingle oak, bur oak and black walnut may have occurred in this area (especially in the higher and drier sites) in the past but may have been eliminated by cutting and changes in hydrology.

Water depth is important not only for foraging habitat but also for maintaining rokery trees. Prolonged annual floods are already causing tree mortality in the rookery. Therefore, water should never be deliberately held so high as to flood the bottomland forest at Pekin Lake, as this would increase the high water stress on rookery trees.

Waterfowl. In years of low river levels throughout the summer, the area provides very important pasture for Canada geese. This area also provides important brood habitat for mallards, wood duck, and Canada geese.

The area was opened to public waterfowl hunting in 1979. Currently, there are 12 blinds which are allocated by an annual draw and hunted in compliance with statewide regulations. The blinds are located on Lower and Upper Lake of the Woods and on Slim Slough. The remaining areas of Pekin Lake (south of Lick Creek), including Lower Lake of the Woods, Pekin Lake, and Worley Lake, are managed as a refuge with no entry between 7 days prior to the opening of the regular waterfowl season through the close of the waterfowl season (including the late goose season).

Waterfowl usage of the site is recorded in periodic aerial inventory data collected by the Illinois State Water Survey. Inventories include information on numbers of individuals of various species of ducks and geese as well as some information on bald eagles and double-crested cormorants. Most flights were on a weekly basis when the weather permitted: fall (September-December): weekly 1949-1956, 1964-1966, 1971-2000 and spring (February-April): 1956, 1958, 1960, 1961, 1974, 1976-1985, 1987, 1990-2001.

Shorebirds. During low-water periods, large numbers of shorebirds feed in shallow water and exposed mud flats at Pekin Lake SFWA during their spring and especially fall migrations. Different species migrate at different times, but overall the spring migration is from mid-March through June, and the fall migration is from early July through early November.

All shorebirds consume invertebrates, but different shorebird species require different foraging water depth and vegetation height and density conditions. A range of habitats is needed to support a diverse species assemblage. Variations in elevation at Pekin Lake allow a variety of foraging conditions at the same time. High shorebird use and high quality habitats led to an application to the American Bird Conservancy has been made nominating the area as a Nationally Important Bird Area.

Wading Birds. Large numbers of wading birds (herons, egrets, and night heron) nest and feed in the Pekin Lake area. This is consistently one of the largest rookeries on the Illinois River and has been active since at least 1935, except from 1973-1985 when logging caused rookery abandonment.

Wading birds forage in Pekin Lake throughout much of the year, except during floods or when the lake is frozen. These birds feed primarily on fish, but also on frogs, insects, crayfish, and small vertebrates. Great blue herons and great egrets require water depths between a few inches and 2 to 3 feet deep for foraging. Black-crowned night herons are smaller and forage in water less than 6 inches deep. High water not only eliminates foraging areas, but also results in dispersal of fish over a larger body of water, which compromises the quality of foraging habitat.

Each wading bird species has somewhat different timing, but in general they arrive in February and March, lay eggs from March to June, and the nestlings develop and fledge between June and August. The most critical time to provide adequate water depths for these birds is during nesting and fledging.

Aquatic Vegetation. Staff at the Illinois River Biological Station (IRBS) began monitoring submersed aquatic vegetation within La Grange Reach of the Illinois River in 1991. The Pekin Lake area was not included in this sampling until 1998 when a stratified random sampling (SRS) design was implemented. Sampling within Pekin Lake has taken place yearly from 1998 through 2001. No submersed aquatic vegetation has been found within the Pekin Lake and surrounding area. Water depths taken during sampling varied depending on river stage from exposed mudflats to almost 4.0 meters. Substrate was dominated by silt and clay. Lack of submersed aquatic vegetation is probably due to a combination of biotic and abiotic factors, including water level fluctuation, increased sedimentation, and poor water quality, as well as uprooting and herbivory by fishes and waterfowl (Personal Com. Mark Pegg, INHS, and LTRMP website).

Invasive and Exotic Species. The main problems present are cockleburs and willow invasion in some of the water areas such as Slim Slough. Reed canary grass is not much of a problem yet, but should be monitored closely. Purple loosestrife had not been found on the site as of the summer of 2000. However, it is found along the river just northwest of Pekin Lake, so it is only a matter of time before it occurs. The area should be monitored closely for purple loosestrife with measures planned to eliminate this species when it does show up. All of the above species will require monitoring and control measures, which will include drawdowns, flooding, disking, spraying, mowing, and herbicide.

Public Use. The site currently provides numerous recreational opportunities, including fishing, waterfowl hunting, bow hunting, picnicking, canoeing, small pleasure boating, hiking, and wildlife observation. Site use estimates included over 550 hunting trips during the 1999-2000 season, but this number is likely significantly understated actual usage since the site is not staffed and sign-ins are voluntary.

Cultural. Initial investigations into cultural resource potential did not reveal any known historic sites and generally indicate low potential.

(2) <u>Expected Future Conditions</u>. It has generally been accepted that on the Illinois River, sedimentation has historically and is likely to continue to reduce the depth of backwater lakes and side channels, deteriorating the natural aquatic resources. Even if relative equilibrium is being established in terms of sediment deposition, it remains very unlikely that the existing degraded habitats would see measurable improvements in the foreseeable future. Water level fluctuations associated with river regulation and human alternation are likely to continue to effect the site.

At Pekin Lake, the net result of changes in river management and historic sedimentation has been the shrinking of the historic Soldwedel Lake volume from an estimated 323 acre-feet in 1903 to 200 acre-feet in recent years (ISWS 2001). With respect to the expected future environmental condition of Pekin Lake, ongoing water level fluctuations and sedimentation will likely result in continued limitations or potential further decline in populations of fish and wildlife.

At the turn of the century, the Illinois River Valley was famous for its hunting and fishing areas, supporting over 2,000 commercial guide operations. Islands, backwaters, side channels, lakes, and bottomland forests allowed fish and game to flourish. In fact, in 1908, the U.S. Department of Commerce and Labor reported that the Illinois River provided 10% of all freshwater fish caught in the United States. Over time, however, the Illinois River's sediment load, diminished water quality, resuspension of sediment, and resultant elevated turbidity levels lead to more limited habitat

values. These factors could ultimately lead to a more drastic decline in economically important fish and wildlife populations and submergent and emergent aquatic vegetation.

(3) Problems and Opportunities. The principal problems at Pekin Lake are altered hydrologic regimes and the lack of depth diversity, resulting in reduced habitat value and diversity. Backwater lakes and side channels along the Illinois River formerly provided a great variety of high quality habitat types with greater depth diversity. These areas formerly provided large areas of deep and shallow water habitats and numerous sloughs and forested wetland habitats. Pekin Lake, which has a relatively low sedimentation rate compared to many other Illinois backwaters, provides an excellent opportunity for restoration of many of these habitat types.

Potential opportunities are listed below that could be addressed by the Corps of Engineers or in collaboration with the non-federal sponsors and other federal and local agencies:

- Preserve and maintain the existing natural heritage and wildlife resource integrity of the site with emphasis on waterfowl management, protect the heron rookery and other sensitive avian species, and maintain the site's value as a fish nursery to the La Grange Pool of the Illinois River.

- Restore habitats and species lost from much of the Illinois River Valley, including overwintering off-channel habitat for fish, aquatic plants, mast trees, and invertebrates.

- Maintain and improve the site's connectivity with the river.

- Provide public recreational activities that are consistent with the major objective and that do not detract from the area's natural value, including consumptive fish and wildlife programs, picnicking, canoeing, small pleasure boating, hiking, and wildlife observation, and provide for scientific research and educational studies at the site. Federal involvement in recreation features is limited to 10% of the overall project costs, and the features cannot diminish the restoration efforts.

(4) Planning Objectives and Constraints. The principal focus of this study is to identify opportunities for restoring degraded ecosystem structures and functions, including the ecosystem's hydrology, plant, fish, and wildlife communities, to a less degraded condition. Specific objectives include:

Planning Objectives:

- Improve fisheries habitat — spawning, nursery, and overwintering and provide greater depth diversity
- Maintain and improve connectivity with the river for fisheries benefits
- Improve water quality (ammonia and DO)
- Improve migratory waterfowl and shorebird habitat (establish a waterbird management area). Through early November, provide shorebirds with a variety of habitats with water depths between 0 and 7 inches. If water is drawn down, remove it slowly to continuously expose new areas of shallow water and mudflats and so that exposed areas do not dry out too quickly. Water management for shorebirds at Pekin Lake should focus primarily on the fall migration. Spring and early summer floods will make it impossible to manage for shorebirds during the spring of most years.
- Improve brood habitat for mallards, wood ducks, and Canada geese
- Protect shorebird foraging areas from disturbance. Disturbing foraging shorebirds can cause unnecessary flights, increasing energy demands, which are critical during migration.

- Maintain and enhance wading birds foraging areas less than 2 to 3 feet deep for great blue herons and great egrets and less than 6 inches for black-crowned night herons, especially from February though August
- Protect heron rookery trees and evaluate options to develop future rookery sites
- Improve forest diversity and introduce mast trees
- Increase the diversity and extent of aquatic vegetation
- Include recreational features that would enhance the restoration efforts. Federal involvement in recreation features is limited to 10% of the overall project costs.

Planning Constraints:

- **Constraint #1 -** Avoid adverse impacts to the existing heron rookery. Minimize flooding in the heron rookery. Prohibit activity in the rookery from February through August to avoid disturbing nesting birds. Minimize disturbance to foraging wading birds, especially February through August. Monitor the heron rookery annually.

- **Constraint #2 -** Avoid adverse impacts to existing eagle nest. Activity within 330 feet of the eagle nest should be prohibited from January 1 to August 31. If necessary, signs can be posted to designate the restricted area.

- **Constraint #3 -** Avoid impacts to *Boltonia decurrens* (decurrent false aster), a state and federally threatened plant that grows in several locations at Pekin Lake SFWA. High water should not be held deliberately in the north end of Pekin Lake SFWA (Worley Lake) during the summer and fall.

- **Constraint #4** - The site has been identified as potentially having a permeable bottom (subsurface connections with the river). If this proves to be the case, the site would not be suitable to serve as an impoundment with water levels significantly different than the Illinois River and likely would require a water source for waterbird management.

- **Constraint #5** - Any proposals that would involve modifications or potential effects on the CILCO power company central road will require coordination and CILCO agreement.

- **Constraint #6** - The powerline that crosses the site has the potential to adversely affect migratory waterfowl.

b. <u>Alternative Plans</u>. To address the restoration of Pekin Lake, it is realized that it must be a collaborative effort with a variety of local, state, and federal stakeholders who are concerned about or charged with the protection and restoration of the area. Potential alternatives to be developed in the feasibility phase to address the above problems and opportunities include, but are not limited to, the following:

- A levee and a water control structure(s) could be constructed across the site allowing separate water management north and south of the levee. This would provide the potential for water level management and moist soil plant production in the upstream unit for waterfowl, wading birds, and shorebirds. Various options include rehabilitating the historic center levee, constructing a new levee, or improving the power company road (this would be to an elevation not exceeding the riverside levee, approximately elevation 440 feet MSL). Some sculpting of depth contours should be evaluated to improve drainage and depth diversity. The state prefers passive management options (stop-log structures and gated culverts for water level management) and does not desire more extensive management options such as raising the riverside levee.

- A water recharge source could be constructed, either a siphon or pump from the Illinois River or a pipeline from the Peoria lock and dam, to allow water management north of the center levee during times of low water.

- Remove sediment south of the center levee to increase depth diversity for fish over-wintering, accommodation of various aquatic species, and to provide areas for fishing and boating. A specific proposal in the Pekin Lake State Fish and Wildlife Area - Management Plan (2001) included dredging approximately 225,000 cubic yards of sediment (23 acres) from Lake of the Woods and 450,000 cubic yards of sediment (46 acres) from Soldwedel Lake.

- Maintain and improve connectivity/direct river access at the south end of Pekin Lake SFWA. This would provide a connection allowing water, aquatic species, and boats free access into Pekin Lake.

- A water control structure at the south end of the site to minimize some water level fluctuations during the late summer, to promote aquatic plant growth. However, if included it should be designed and managed to allow connections during the majority of the year and could provide features to allow recreational boats to be pulled over into Pekin Lake.

- Increasing the diversity of woodland species should be investigated. This would include evaluating or reestablishing native bottomland mast-producing tree species such as pin oak, shingle oak, bur oak, swamp white oak, persimmon, hackberry, and pecan to improve the habitat for a variety of bottomland dwelling fauna. The existing woodland does not produce a great deal of mast (food) for wildlife or waterfowl. The intent would be to introduce mast trees, not reforest, so large-scale tree planting is not recommended. Any tree planting should be monitored and competing vegetation controlled to the extent possible during establishment. Evaluations should also look into developing future rookery sites. There is the potential to increase the elevation of some terrestrial areas with dredged materials if dredging occurs in some of the lake areas; this could aid in the establishment more diverse tree species.

- Recreational features should be considered in conjunction with any restoration. The site management plan calls for improvements including upgrade of the site access road, development and improvement of hiking trails, construction of toilet and picnic shelters, development of a waterfowl/wildlife viewing platform, and inclusion of a small boat and canoe launch. Federal involvement in recreation features is limited to 10% of the overall project costs and the features cannot diminish the restoration efforts.

c. Recommendation on Critical Restoration Areas. Based on preliminary evaluations, all of the above options were selected for further feasibility level evaluation. Reasons for the selection of all of the options include the fact that the proposals address a number of the critical restoration needs in the basin, have a high potential for federal and state interest, and require similar research investigations in evaluating all of the alternatives. Further formulation and evaluation of alternatives will take place in the next phase. The next phase will be initiated by development of a Project Management Plan, which will outline the scope, schedule, and cost of the feasibility level investigation.

9. ESTIMATED MILESTONES. The following is a draft schedule subject to revision during the development of the detailed Project Management Plan:

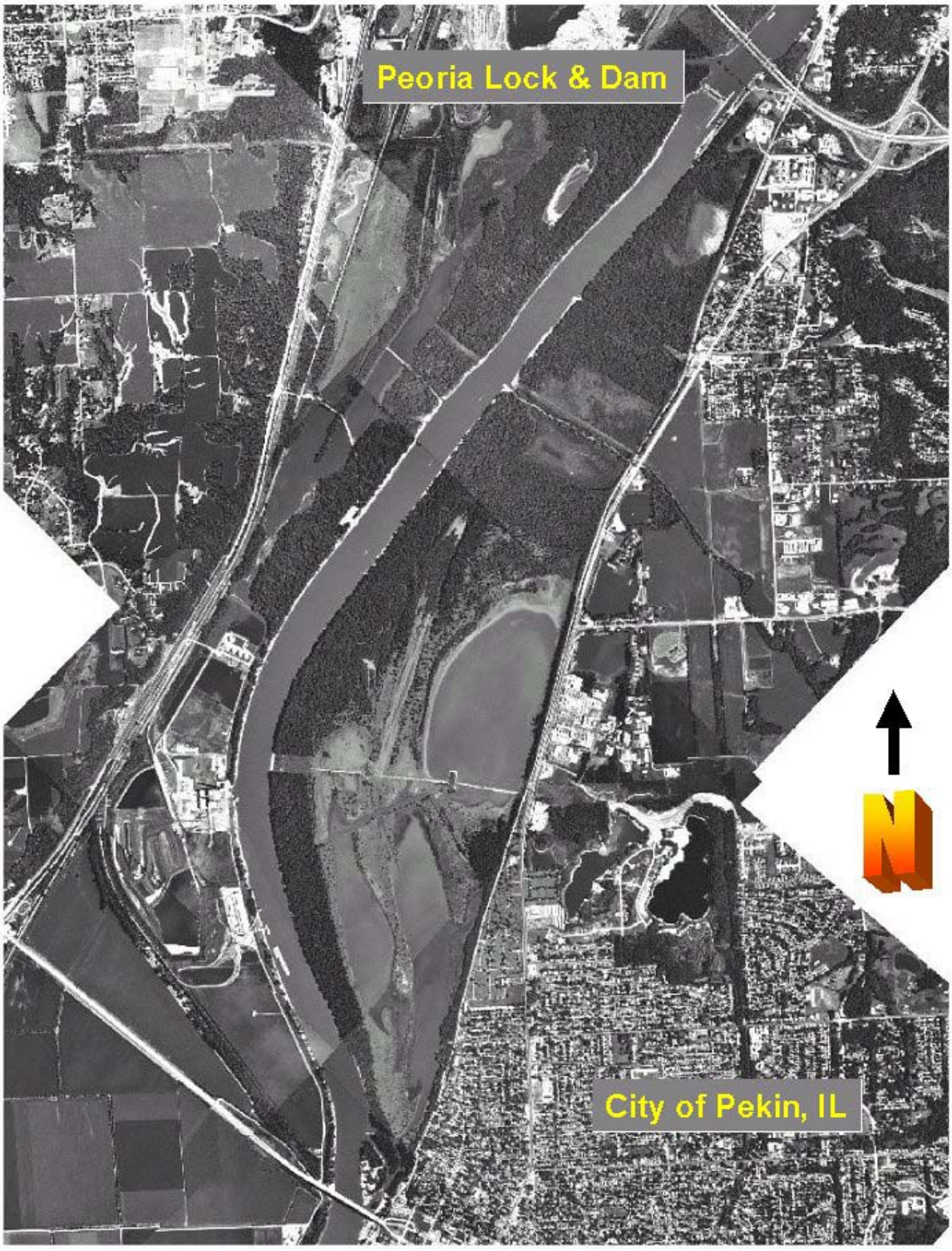
Complete Project Management Plan	August 2001
Initiate Feasibility Level Study	August 2001
Formulate Alternatives	March 2002

Evaluate Alternatives	May 2002
Complete Feasibility Level Analysis and Draft NEPA Documentation (Environmental Analysis)	October 2002

11. RECOMMENDATIONS. Recommend that the Corps, the ILDNR, and other state and federal agencies initiate development of the Project Management Plan and feasibility level study for the Pekin Lake site-specific project(s).

12. VIEWS OF OTHER RESOURCE AGENCIES. This fact sheet was developed in partnership with the Corps of Engineers, the Illinois Department of Natural Resources, the USDA Natural Resources Conservation Service, The Nature Conservancy, and the Tri-County Regional Planning Commission. Meetings have also have been held with the city of Pekin.

13. PROJECT AREA MAP. The project area map is included as Figure 1.


Peoria Lock & Dam
N
City of Pekin, IL

Pekin Lake State Fish and Wildlife Area
Existing Conditions